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The updated
Conservation Needs Inventory

Also
Resources and industry

Soil Conservation Service
U. S. Department of Agriculture

Soil Conservation

Devoted to the wise use of land and water resources

December 1969 Vol. 35, No. 5

Soil Conservation

Devoted to the wise use of land and water resources

Where we stand . . .

In a time of general questioning of national directions, we can well ask where we stand in the care of basic natural resources.

Updating of the National Inventory of Soil and Water Conservation Needs gives us no cause for complacency.

We publish the first general account (p. 99-109) of the findings of more than 3,000 county committees reexamining the way our private land is used and the adequacy of its conservation treatment.

The national summary figures are provided by Julius Mai and Armin Grunewald, who led the tedious task of bringing together, verifying, and collating the thousands of answers from State Conservation Needs Committees. B. D. Blakely wrote the report on cropland and pasture, R. E. Williams on native grazing land, C. T. Prout on forest, and Carl Fetzer on watershed projects.

Some of the figures are not final to the last digit, but their significance is. The fact that nearly two-thirds of our private rural land is inadequately treated after 3 decades of national effort surely means that conservation is a continuing job, not one that can be tidily finished and put behind us.

Base for industry

A case study of an RC&D Project (p. 110) by Dale Munk (SCS) and Clarence Parker (Ext.) clearly shows that soil and water resources are the base for industrial development in an area.

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Another look at our resources

COVER: An adequately treated farm landscape in Wisconsin has contour stripcropping and terracing on the cultivated land and permanent cover of grass or trees on the steeper slopes.

Prepared in the Division of Information, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250

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Soil and Water

Conservation Needs Inventory

A preliminary report on the updated figures,.base year 1967

The National Inventory of Soil and Water Conservation Needs portrays the use and condition of our privately owned rural land today. Revised data as of base year 1967 are now being prepared for publication in state and national reports.

Eight U. S. Department of Agriculture agencies and U. S. Department of Interior's Bureau of Indian Affairs cooperated in updating the 1958 county-by-county inventory of land use and conservation treatment needs of the Nation's nonfederal rural land and the inventory of watershed project needs.

Department of Agriculture agencies participating in the 3-year study are the Agricultural Research Service, Agricultural Stabilization and Conservation Service, Economic Research Service, Farmers Home Administration, Federal Extension Service, Forest Service, Soil Conservation Service, and Statistical Reporting Service. Leadership was assigned the Soil Conservation Service. Representatives of Land Grant Colleges, state agencies, and interested county organizations participated on the state and county levels.

The new land use inventory shows 1,438 million acres of nonfederal rural land in the 50 states. Of the total inventory acreage, 437.6 million acres is cropland, 481.9 million is pasture and range, 462.3 million acres is forest, and 56.2 million acres is classed as other land.

The data show that we now have 10.1 million acres less cropland than in the 1958 inventory, 3.5 million acres less pasture and range, 9.6 million acres more forest, and 10.8 million acres less other land. This is a net shift of almost 15 million acres out of inventory to nonfarming uses since the 1958 inventory. Most of the loss went into urban and builtup uses, some to federal noncropland, and a lesser amount went under water in ponds and reservoirs.

Conservation treatment needs were estimated for the land in its present use. Thirty-six percent of all land in the inventory is adequately treated for soil and water conservation. By land uses, the part adequately treated is 37 percent of cropland, 29 percent of range, 28 percent of pasture, 38 percent of forest, and 71 percent of other land.

No attempt was made to identify potential alternative or multiple uses. Such can, however, be determined for any specific soil from the soil descriptions and interpretations maintained in Soil Conservation Service offices across the Nation.

In the watershed projects inventory 19,194 drainage areas were identified and delineated. Of these, 8,904 project-size hydrologic units are rated potentially feasible for project development under the Watershed Protection and Flood Prevention Act, Public Law 566.

The kind and extent of watershed problems needing project action and eligible under provisions of Public Law 566 were estimated for each watershed.

The vast amount of information in the Conservation Needs Inventory highlights the land-resource problems facing the Nation, and shows in general where the problems are. The data can serve as a basis for future resource development in planning ahead for production of food and fibre, including wood products, to meet the demands of our society.

Some of the figures in this report are preliminary and subject to correction. Changes probably will not affect more than the final digit in any case. Because of rounding, some totals in tables may not equal the sum of the items listed.

Cropland

59 percent of cropland needs conservation treatment

Of the 437.6 million acres of cropland in the United States, 37 percent (about 161 million acres) is adequately treated for soil and water conservation. Four percent is on land in capability classes V, VI, VII, and VIII and needs to be converted to a different use. The remaining 59 percent needs some sort of conservation treatment.

Of the cropland in tillage rotation, about 38 percent is in row crops; 24 percent in close-seeded field crops such as small grain and rice; and 18 percent in grasses and legumes, either as part of the cropping system or as permanent hay. The remainder is in fallow, diverted acres, or temporarily idle.

The total amount of cropland has decreased by 10.1 million acres since 1958, from 447.7 to 437.6 million acres. Nearly 90 percent of the reduction has occurred in the Southern and Northeastern states where population concentrations create a demand for even more food and fiber from the remaining acres.

Cultural or mechanical practices need to be applied on 276.8 million acres—more than 60 percent of the cropland—to hold soil losses to an acceptable minimum.

Sixteen percent of the cropland in tillage rotation needs only annual residues or cover crops. Five percent requires more sod in the cropping system, including several million acres of permanent hayland that should be reseeded or fertilized.

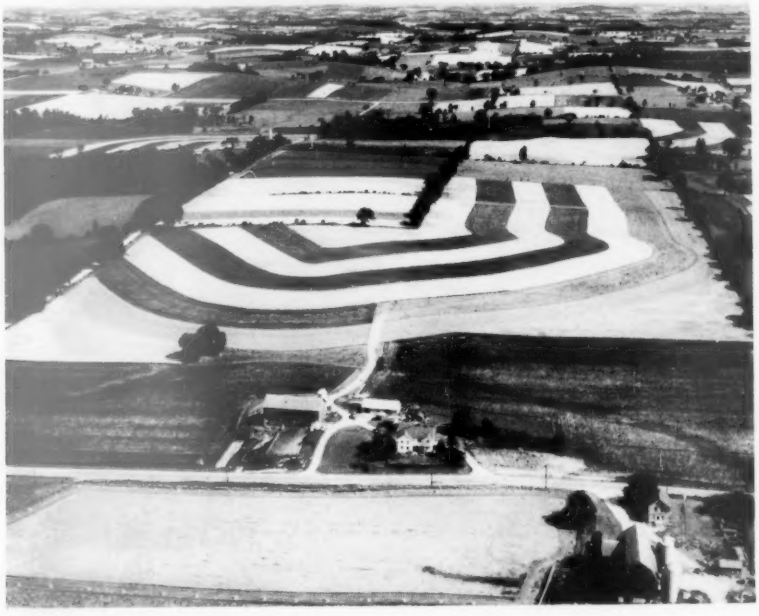
Terraces, stripcropping, and diversions are needed on 22 percent of the cropland to reduce water and wind erosion. This combination is recommended as adequate treatment on about 2 out of every 5 acres that have erosion problems. One out of every 3 acres with a water hazard needs to be drained.

While complete information is not available for the updated inventory, figures from 26 states indicate that 75 percent of the land in need of conversion to alternative uses is in classes V through VIII.

About 40.5 million acres of cropland is irrigated, 36.4 million acres in the 17 Western states. Row crops are grown on 46 percent of the irrigated acreage, hay on 30 percent, and small grain or rice on 20 percent.

About 29 percent of the irrigated cropland is adequately treated and 12 percent needs only cultural measures, such as effective use of residues and good tillage practices. These portions of the irrigated cropland, or about 41 percent of the total, have good irrigation systems and proper water management.

82.6 million acres needs stripcropping, terraces, and diversions.



Cropland includes all cultivated land used for field crops or hay and pasture in rotation; cropland temporarily idle or diverted from production under government programs; permanent hayland; orchards, vineyards, and bush fruits; and open land formerly cropped and not converted to another use.

Of the remaining 59 percent that needs treatment, 15.8 million acres needs improved irrigation systems. This is the most needed practice in all of the states with large acreages of irrigated cropland, with the exception of Wyoming, where water management is the most needed. In addition, 8.2 million acres has good irrigation systems but needs proper irrigation water management.

Conservation Treatment Needs

	Acres (Millions)	Percent
Tillage rotation (dry land):		
Treatment adequate	139.6	37
Residue management and annual cover	60.8	16
Sod in rotation	22.2	6
Contouring only	16.0	4
Stripcropping, terraces, and diversions	82.6	22
Change in land use to permanent cover	15.7	4
Drainage system	43.4	11
Total dry land in tillage rotation	380.3	100
Irrigated cropland:		
Treatment adequate	11.7	29
Cultural management	4.8	12
Improved irrigation system	15.8	39
Water management	8.2	20
Total irrigated cropland	40.5	100
Total tillage rotation	420.8	
Open land formerly cropped:		
Treatment adequate	7.1	61
Conservation treatment needed	4.5	39
Total open land formerly cropped	11.6	100
Orchards and vineyards:		
Treatment adequate	2.3	45
Conservation treatment needed	2.8	55
Total orchards and vineyards	5.1	100
All cropland:		
Treatment adequate	160.7	37
Change in land use needed	15.7	4
Conservation treatment needed	261.1	59
Total all cropland	437.6	100

15.8 million acres needs improved irrigation systems.

43 million acres needs improved drainage.

60.8 million acres needs only residue management and annual cover.

Native grazing land

66 percent of rangeland needs conservation treatment

Grazing is the primary use of 380 million acres of rangeland and 47 million acres of noncommercial forest land in the United States. In addition, grazing is practiced on 90 million acres of commercial forest land, where it is a compatible secondary use when sound grazing management systems are followed.

About 29 percent of nonfederal rangeland in the United States is adequately treated according to current conservation standards. Grazing land can be maintained, of course, only through continued proper grazing use. About 5 percent of the total is not feasible to treat, due to soil, topographic, or climatic limitations, leaving 66 percent needing treatment to reach soil and water conservation objectives.

Of the noncommercial forest land being grazed, about 70 percent needs improvement for grazing use and 9 percent needs reduction or elimination of grazing to protect the land against soil deterioration or to improve the cover.

Native grazing land differs from improved or tame pastureland in that the plant cover consists of a community of several to many kinds of native plants, rather than one or a few tame species. In addition, native plant communities are long-lived—indeed, they may persist and improve in perpetuity under judicious grazing management.

The diversity of plants on native grazing land makes it valuable for several compatible secondary uses in addition to forage production and grazing by livestock. Big game animals and other wildlife also find a large part of their habitat on rangeland and related grazing lands. Good grazing land management is also good wildlife management for many important kinds of animals.

Rangeland is land on which the natural potential (climax) plant cover is composed principally of native grasses, forbs, and shrubs valuable for forage. It includes natural grasslands and savannahs or brushlands not included in forest land.

Rangeland treatments and practices sometimes can be altered to improve wildlife habitat while fulfilling their primary objectives. For example, brush of value for cover and food for deer can be left along rough ridges and watercourses. Large level areas can be cleared in strips to improve forage for livestock, yet leaving some brush for wildlife. Areas on which brush is controlled produce more forage for livestock, and the edges between the cleared and uncleared strips favor deer and upland game.

The nature of the plant cover on native grazing land also has a significant influence on erosion, surface hydrology, and sediment loads in streams and lakes.

The scope of native grazing land as open space and its diversity in plants, topography, domestic animals, and wildlife invite a growing number of outdoor recreationists.

In considering conservation needs and the application of practices, both primary and compatible secondary uses of the land must be considered.

Treatments defined in the Conservation Needs Inventory relate, in some cases, to cultural treatments such as seeding, brush control, and the like. The most vital aspect of grazing land management, however, is the proper manipulation of grazing animals to achieve desired degrees of forage harvest. Proper grazing use, resulting from proper kinds and numbers of livestock, proper season of use, and planned grazing systems, is an essential element in all treatment needs discussed.

51.5 million acres of range needs improvement with brush control.

111.9 million acres of range is adequately treated.

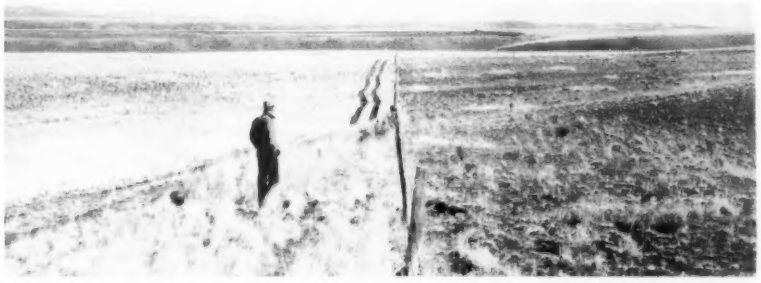
Kinds of Native Grazing Land

	Acres (Millions)
Rangeland	380
Noncommercial forest	47
Commercial forest	90
Total	517

Conservation Treatment Needs

	Acres (Millions)	Percent
Rangeland:		
Treatment adequate	111.9	29
No treatment feasible	16.9	5
Change in land use	0.1	
Only protection from overgrazing	123.3	32
Improvement of present plant cover	40.0	11
Improvement with brush control	51.5	14
Reestablishment of plant cover	11.8	3
Reestablishment with brush control	24.6	6
Total rangeland	380.1	100
Forest land being grazed:		
Treatment adequate for grazing use	9.7	21
Needs improvement for grazing use	33.0	70
Needs reduction or elimination of grazing	4.3	9
Total noncommercial forest	47.0	100

16.9 million acres of range is not feasible to treat.



123.3 million acres of range needs only protection from overgrazing.

24.6 million acres of range needs reestablishment with brush control.

11.8 million acres of range needs reestablishment of plant cover.

33 million acres of noncommercial forest needs improvement for grazing use.

90 million acres of commercial forest land is grazed.

Pastureland

68 percent of pastureland needs conservation treatment

Of the nearly 102 million acres of pastureland in the United States, 70 million acres or 68 percent needs some kind of conservation treatment to improve the condition of vegetation and meet the needs for forage on farms and ranches.

About 28.2 million acres of pastureland is adequately treated. Nearly 3 million acres should be converted to forest or other noncrop land use, and another 1.3 million acres is not feasible to treat.

Of the pastureland feasible to treat, 25 million acres could be improved by the application of lime and fertilizer, 13.6 million acres needs only proper grazing, and nearly 5.5 million acres needs brush control. On these areas the present vegetation is of the right kind but attention needs to be given to management practices to realize the full potential of the grazing resource. With these kinds of improvement, it is possible to increase forage production to two to three times that obtained under present conditions.

Pasture includes lands producing forage plants, principally introduced species, primarily for grazing and not included in cropland rotation; includes native pasture in humid areas and may contain shade or timber trees if the canopy is less than 10 percent.

The remaining 26 million acres of pasture feasible to treat is in such condition that the areas need reestablishment of forage plants, either with or without brush control. These conditions are most prevalent in the Midwest and Southern states. Twenty-six states reported that of the acreage needing reestablishing, 77 percent is on land-capability classes I through IV.

Returns from 26 states indicate that more than two-thirds of the permanent pasture is on land of capability classes I, II, III, and IV. Of the acreage needing reestablishment of forage plants, 77 percent is on land of these capability classes.

Conservation Treatment Needs

	Acres (Million)	Percent
Treatment adequate	28.2	28
No treatment feasible	1.3	1
Change in land use	2.2	3
Only protection from overgrazing	13.6	13
Improvement of present plant cover	27.9	27
Improvement with brush control	5.5	5
Reestablishment of plant cover	14.2	14
Reestablishment with brush control	8.9	9
Total pasture	101.8	100

It is evident, therefore, that most pastures are on soils that will respond to treatment and management.

28.2 million acres of pasture is adequately treated.

2.2 million acres needs to be changed to other land use in permanent cover, and 1.3 million acres is not feasible to treat.

47 million acres needs only improvement of present plant cover, such as proper grazing, application of fertilizer, and brush control.

23.1 million acres needs reestablishment of plant cover, either with or without brush control.

Forest land

71 percent of commercial forest needs conservation treatment

The Conservation Needs Inventory covers about 462.3 million acres of forest land outside the National Forests and other public lands of the United States. Of this, 398.2 million acres is commercial forest and 64.1 million acres is noncommercial.

These are the private forest resources of the United States, comprising an area 2½ times the extent of public forest lands. The inventoried acreage is owned by more than 4 million people who must maintain, protect, and, where needed, improve their share of the Nation's forest resources if people are to have the products they will need in the future.

The size of the job—largely a continuing or recurring one—is indicated by the fact that 71 percent of the commercial forest land now needs some kind of conservation treatment. About 26 percent needs establishment or reinforcement of existing stands and 45 percent needs timber-stand improvement. About 29 percent needs no treatment.

Forest land includes land that is at least 10 percent stocked with forest trees and that is capable of producing forest products or influencing a water regime; land that formerly grew trees and is not currently developed for nonforest use; chaparral areas in the West; and land that has been planted to trees.

Noncommercial forest land, by its nature, does not lend itself either economically or physically to treatment. In some instances, reestablishment or reinforcement of the stand is needed for watershed protection, wildlife habitat improvement, or to hide the scars of past misuse. About 4 percent of the acreage needs such treatment; the rest is not feasible to treat.

The 116.0 million acres of commercial forest land on which no conservation treatment is needed has a good stand of trees of species suited to the soil and site conditions. Some of these areas are at the stage in growth that improved timber harvesting can be carried out, and others are young thrifty growing stands that do not need immediate attention but which, within a few years, may need thinning or other improvements to bring them to a merchantable size.

Some 103.6 million acres of commercial forest land is producing below its potential because of inadequate stocking. Some areas must be completely reforested; some may be brought to adequate stocking by planting the open areas; and others can be improved by conversion from one kind of tree to a better one.

Timber-stand improvement is the most prevalent conservation need on forest land. According to the inventory, 178.6 million acres needs improvement of various kinds to bring them into full productivity. Among the measures needed are thinning stands of young trees be-

About 116 million acres of commercial (left) and 61.8 million acres of noncommercial (right) forest land needs no treatment.

Conservation Treatment Needs

	Acres (Million)	Percent
Commercial forest:		
Treatment adequate	116.0	29
Establishment or reinforcement of stand	103.6	26
Timber stand improvement	178.6	45
Total commercial forest	398.2	100
Percent of all forest		86
Noncommercial forest:		
Treatment adequate	61.8	96
Establishment and reinforcement of stand	2.3	4
Total noncommercial forest	64.1	100
Percent of all forest		14
All forest:		
Treatment adequate	177.8	38
Establishment and reinforcement of stand	105.9	23
Timber stand improvement	178.6	39
Total forest	462.3	100
All forest grazed (included in above):		
Treatment adequate	29.1	21
Needs treatment to improve forest	64.5	47
Needs reduction or elimination of grazing	43.2	32
Total forest grazed	136.8	100
Percent of all forest		30

low a commercial size, removing inferior trees to allow the straight thrifty ones room to grow, removing poor quality and poorly formed trees that overtop more desirable ones, and the improvement of individual trees by pruning.

In some sections of the country grazing is a use compatible with growing timber products, and 89.8 million acres of commercial forest is now grazed. Of this, 19.4 million acres will safely produce forage for livestock or wildlife without additional treatment. On 31.6 million acres some type of treatment is needed to improve forage.

On other areas, grazing is not a compatible use, and 38.8 million acres of commercial forest land needs to have grazing reduced or eliminated.

178.6 million acres of commercial forest land needs timber-stand improvement by thinning or removing inferior trees.

103.6 million acres of commercial forest land needs reestablishment or reinforcement of timber stands by planting (left) or natural regeneration (right).

Watershed projects

46 percent of upstream watersheds need project action

The Watershed Project Inventory, as a part of the National Inventory of Soil and Water Conservation Needs, makes an independent appraisal of the Nation's land and water resources as hydrologic units. It identifies needs for project action over and beyond the conservation-treatment needs determined for land in each major use as reported in the preceding pages.

The upstream watersheds were delineated and appraised on an individual basis according to criteria that apply to projects under the Watershed Protection and Flood Prevention Act, Public Law 566.

First, the area of the 48 conterminous states was divided into 19 major drainage areas. Hawaii was considered separately and Alaska was not included in the inventory. Each of the major drainage areas was further subdivided into principal river basins, and these, in turn, into tributaries having drainage areas larger than 750 square miles. Within each tributary, project-size watersheds were delineated, and each watershed was studied from maps and by actual examination on the ground.

Local inventory committees and technical staffs considered those problems expected to require attention within the next 10 years. They estimated the kinds of improvements needed and whether project-type undertakings were physically and economically feasible. Substantial areas of deserts and mountains where it was apparent that watershed measures would not be needed or feasible within the next 10 years were blocked out into arbitrary units and studied in less detail. Some

Watershed Project Inventory

	No.	Acres (1,000)
Watersheds delineated	19,194	1,930,770
Watersheds feasible for project action	8,904	724,720
Percent of delineated watersheds feasible	46	38
Problems Needing Project Action		
Floodwater and sediment damage		
Agricultural		92,662
Urban		2,821
Erosion damage		72,844
Agricultural water management		
Drainage		65,367
Irrigation		16,732
Nonagricultural water management		
Rural water supply	5,540	
Municipal or industrial water supply	4,945	
Recreation development	12,396	
Fish and wildlife habitat	13,059	
Water-quality control	8,778	

8,904 upstream watersheds need multipurpose flood-prevention projects.

19,194 project-size watersheds and other inventory areas were delineated and studied. The total flood-plain area within these watersheds is about 134 million acres. Of this area some 129 million acres is rural land and 5 million acres is within urban areas. This is the best information about the total area subject to flooding in the upstream watersheds that has been obtained up to this time.

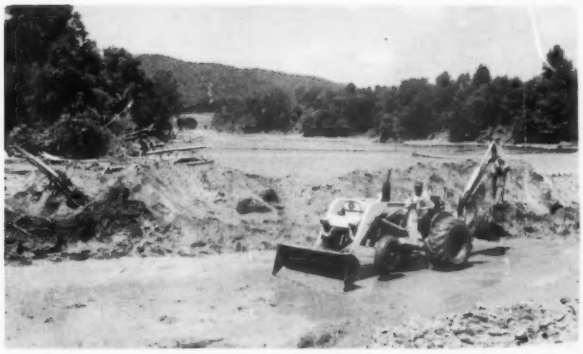
Additional studies were made to determine which watersheds are potentially feasible for project-type action under the provisions of Public Law 566. A watershed was considered a potentially feasible project if the estimated benefits are greater than the estimated costs for needed flood-prevention or agricultural water-management measures.

About 46 percent of the delineated watersheds, including 38 percent of the area, were considered potentially feasible projects. The 8,904 feasible projects average about 81,400 acres in size, a total of 724.7 million acres.

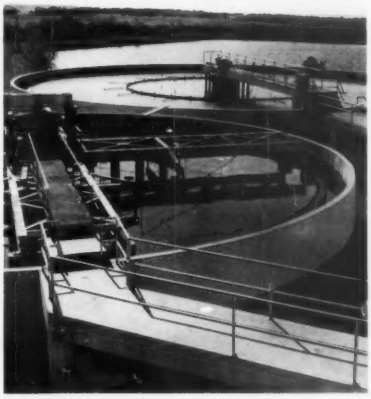
The problems needing project action in the 19,194 watersheds include floodwater and sediment damages on 92.7 million acres of agricultural land and 2.8 million acres of urban land. Severe erosion damage needing project-type action occurs on 72.8 million acres. Drainage improvements are needed on 65.4 million acres, and irrigation is needed on another 16.7 million acres.

Multiple-purpose development is an effective way to provide for resource needs in a watershed area by combining water supply and control facilities with flood-prevention measures. There are needs and potentials for developing rural water supply in 5,540 watersheds; municipal and industrial water supply in 4,945 watersheds; recreation development in 12,396 watersheds; fish and wildlife improvement in 13,059 watersheds; and water-quality control in 8,778 watersheds. ♦

95.5 million acres of flood plain is subject to floodwater and sediment damage.



In addition to flood prevention, there is need for municipal or industrial water supply in 4,945 watersheds, recreation development in 12,396 watersheds, and fish and wildlife development in 13,059 watersheds.



Resources and industry

Conservation and development of land and water bring payrolls to people of Upper Willamette RC&D Project

By H. Dale Munk and Clarence R. Parker
RC&D Project coordinator, SCS, and community development specialist, Cooperative Extension Service, Eugene, Oreg.

Fifteen major construction projects and six new industries have brought a new tempo to the economy of west central Oregon since the Upper Willamette RC&D Project went into operation less than 5 years ago.

"Industry benefits in a multitude of ways when local people join to form an RC&D Project," says W. G. Nash, president of the local project organization.

Preparing the land for intensified use has been a goal of the project sponsors since operations were authorized in March 1965. "Agriculture and people living on the land are the chief beneficiaries, but industry must use resources to operate, and that's where we come in," Nash continues.

The project plan calls for flood control, irrigation, drainage, and recreation and forest resource development. These multiple activities are directed by an executive board representing six soil and water conservation districts, three county governments, and the state soil and water conservation commission.

To date, 306 measures have been proposed to the executive board of the project by local interest groups. Of these, 192 have been activated, 72 are complete and in operation, 54 are under construction, and plans are being developed for 66. "The completed project measures have meant a $3,961,750 annual gross income for the project area," Nash says.

The Willakenzie Watershed Project under Public Law 566 has completed flood-control dike and channel construction, totaling $386,145, that has benefited Interstate Highways 5 and 105 and made it possible for three major industries to go into full operation. In addition, two subdivisions, two shopping centers, an 800-student junior high school, an 1,800-student high school, and hundreds of homes have been built in an area where periodic floods formerly occurred from the McKenzie River. The Southern Pacific Railroad is now developing plans for a major industrial center.

Francis Waggoner, Lane County surveyor, estimated that the watershed project prevented $300,000 in property damage from the one major storm in December 1964.

Fifteen major construction projects were completed in the project area during the past year, including four structures for bank stabilization, three for irrigation, and seven for flood prevention. One major dam was constructed by the Army Corps of Engineers for flood control, recreation, power generation, and other downstream benefits. This dam, the flood-prevention measures of the watershed project, and other water control structures have made it possible for farmers to convert from grass seed to higher income crops,

Upper Willamette RC&D Project supported American Can Company in building its $40 million pulp and paper mill in the area.

The new Hulbert Lake Irrigation Project diverts water from Long Tom River to irrigate about 4,000 acres.

such as bush and pole beans, sweet corn, strawberries, blackberries, and mint.

Land improvements help

The three new irrigation systems provide water to 2,600 acres and a more reliable supply of irrigation water to an additional 2,500 acres. George Lowe, a leader in the Hulbert Lake Irrigation Project, says, "The irrigation project has increased my alfalfa hay production from 11,000 to 17,000 bales on the same land and my silage corn yield has increased by 10 tons."

Such land improvements were in the minds of officials planning the Hudson House Food Processing Plant. Roy Driskill, plant manager, states, "We settled in the Harrisburg area because of the great potential for land development, abundant water supplies, the excellent transportation facilities, and the progressive attitude of the people."

Harrisburg, a community of 1300, is one of two cities in Linn County to complete a "comprehensive plan." It is a highly industrialized area seeking opportunities for food processing. Agriculture has for years provided the economic base for the community, but since 1962 this base has been expanded to include agri-business and manufacturing.

In Albany, Ellis Byer, manager of Oregon Freeze Dry, stated that their plant was constructed because of developing land resources, low-cost power, adequate available manpower, and the high quality strawberries that could be grown in the area. The company recently enlarged its operation to take advantage of expanded markets.

Albany Frozen Foods is another agricultural processing plant that recently expanded. Manager Glenn Graden says, "We have grown in size to meet expanding markets. The upper Willamette Valley has adequate soils and an abundant supply of quality irrigation water to produce the berry and vegetable crops we need to put out a good pack."

People working together

An RC&D Project is also people working together for a common cause. One example is the way the Linn County cities of Brownsville and Halsey planned together for industry and future growth when the American Can Company proposed building a $40 million pulp and paper mill in the area. The plant, designed to produce 15 box cars of finished paper products each day and employ 450 people with an annual payroll of $4 million, went into full operation last September.

Halsey, population 450, has undertaken to provide adequate sewer and water systems in order to meet the anticipated expansion. The residents have approved a bond issue of some $500,000 to develop a new sewer system and replace the old water system. The Soil Conservation Service and community development specialist of the Cooperative Extension Service have provided the Halsey Planning Commission with soil maps indicating suitabilities for various types of land use development.

Dick Manion, chairman of the Brownsville Planning Commission, says, "We have developed a new philosophy regarding industry since the coming of American Can. We feel this community of 980 people has great potential as a quality residential area to serve nearby development."

He goes on to say, "Yes, we want industry but we feel that retaining our environment is the first priority. We hope, as do other cities, that we can attract supportive industries and retain the livability of our environment."

The Brownsville Planning Commission is also using soil surveys and interpretations as a basis for development. Manion cites a recent example of a subdivider wishing to develop in the flood plain. "We will not approve this subdivision until the developer can assure us that adequate protection will be provided for the future residents."

Both Brownsville and Halsey are receiving professional planning as-

sistance by agreement with the Linn County Planning Department.

The pride of Lane County is Cottage Grove, recently named an All-American city. City Manager Larry Rice indicated that the community's comprehensive planning program played a significant part in winning this recognition, and the SCS soil surveys were an important factor in the plan. Surveys also helped in designating one large area as an industrial site.

A $1½ million tourist complex is to be developed in the near future. An existing luxury motel hires about 150 people at peak operation, and these employees, primarily local people, return the earned dollars to the community.

The city has installed a tertiary sewage treatment plant—at this time the only one in Oregon. It has a long-range plan to acquire river frontage along the Coast Fork of the Willamette River and develop a greenway through the city and into the country. About half of the river frontage has been acquired.

The project sponsors have formed seven committees to plan for and carry out resource developments. The Woodland Committee has been active in developing the most efficient use of this valuable resource which occupies about 80 percent of the project area. More than half of the forest land is in private ownership and a good part of it is in the hands of small woodland owners. Harold Sasser, farm forester for the State Forestry Department, is helping the committee plan for full resource development.

The Woodland Committee has been working to develop utilization of two major woodland products: (1) The small trees from private woodlots, and (2) Douglasfir bark, a byproduct of the extensive timber harvesting in the valley.

As a result, two industries have been established using posts and poles from commercial and precommercial thinnings for stand improvement. The posts and poles are being used on farms and ranches for farm buildings, vacation log cabins, pole corrals, fence posts, fencing along county roads and highways, and building rustic fences around country estates.

Earl Goodwin, owner of Small Tree Products, says, "There is a market and enough raw material for many businesses such as mine in the project area. Opportunities are almost unlimited."

Other industries are beginning to benefit from using Douglasfir bark, a byproduct long considered a waste. Researchers estimate that more than a million tons of this material has been going up in smoke each year in Oregon. In the project area more than ½ million tons of bark is produced annually. Project leaders have been meeting regularly with the Bark Committee of the Eugene Chamber of Commerce to find ways of utilizing this "waste."

"Homeowners, landscape contractors, and nursery men seem to offer the best immediate hope for bark use," says Douglas Cruickshank, forestry marketing specialist of the State Forestry Department assisting the project.

"As a soil amendment, bark loosens the soil and aids in water retention. As a ground cover or mulch, it is decorative, discourages weeds, and keeps the soil moist." It is also being successfully used for coastal sand-dune stabilization, as a mulch in pear and peach orchards, for backfill in agricultural tile lines. Coarse or "rock bark" is protecting flowers and shrubs from jet blasts at the Eugene Municipal Airport.

Marvin Rexius of Rexius Fuel Service states that his business of collecting, sizing, processing, and distributing bark has increased 78 percent in 3 years.

"We have made considerable progress," says President Nash, "but there is a long way to go. We set our goals each year and readjust them to keep up with changing conditions and needs, and we take our coordinating role seriously. The Upper Willamette RC&D Project certainly cannot take credit for all the desirable activities going on, but it often serves as a catalyst to get needed developments moving." ♦

Such high value crops as beans are made possible by improved irrigation and flood prevention.

Extension agents help RC&D projects

To provide additional education assistance to resource conservation and development projects, the Cooperative Extension Service in 16 states has employed area resource development agents to work with county agents, RC&D project coordinators, and the local sponsors of projects. The program was initiated through a memorandum of understanding between SCS and the Federal Extension Service that authorized the transfer of SCS funds to that agency.

The Federal Extension Service makes allotments to the Cooperative Extension Service in states with RC&D projects in the operations stage. These allotments are based on project requests, plans, and available funds. During the initial 2 years of the agreement funds have been allocated to 20 states for educational activities on an area basis. The federal funds are often supplemented by state funds.

The area resource development agents work with county agents and others in providing groups and individuals with information on the RC&D opportunities in developing the natural resources within each project area. Although they still do some individual counseling, reports from the agents state that most of their work is with public officials, civic and service clubs, municipal and county governments, conservation districts, corporations, associations, and agricultural and governmental agencies.

Typical is a statement by James E. Summers, Salem, Mo., who is assisting the sponsors of the five-county Top of the Ozarks Rivers RC&D Project in south central Missouri. "My job is to work with local citizens in providing them with information and background needed to help them arrive at a decision." He also organized four short courses, attended by 175 people, last year to implement a project measure of restoring section corners and section lines. University of Missouri specialists and the U. S. Forest Service assisted with an 8-hour course on land surveying.

Clarence R. Parker, Eugene, Oreg., in commenting on presenting a soil survey report at the Brownsville City Council and Planning Commission meeting, observed: "My role was principally one of encouraging the city council to take advantage of soil services available through the RC&D Project."

To benefit from group drains (a popular project measure in the Pri-Ru-Ta Project in northwest Wisconsin) affected landowners must cooperate. Area Agent Norman F. Kahl provided information on costs, organization, and alternatives for action. Several agencies cooperated on this project measure; SCS providing technical assistance; Agricultural Stabilization and Conservation Service assisting with cost-sharing; and the Farmers Home Administration furnishing loans for land-leveling equipment.

David O. Dickens, county agent at Hamilton, Mont., reported, "It is often necessary to explain procedure and regulations of various programs to the people involved and assist them to study the alternatives to help them make decisions."

The Hunter Grazing Association of Corvallis, Mont., received information on range management, weed and brush control, and improving grasses.—HAROLD I. OWENS, *extension soil and water conservationist, Federal Extension Service, Washington, D. C.* ♦

Conservation Needs Inventory locates specialty crop areas

When the Southeast Kansas Food Industry Advisory Task Group recently sought information on growing specialized crops in nine southeast Kansas counties, the U.S. Department of Agriculture in Kansas was able to provide information on suitable soils from its latest Conservation Needs Inventory (CNI).

Working from the inventory data, five SCS technicians; an extension agent; a representative of Ozarks Regional Commission, an agency interested in economic development; a representative of Farm Products Management, Inc.; and Agri Business Systems Management Corporation had set up soil groups on which various specialty crops could be grown. Seven soil groups were given a rating of poor, good, or excellent for fruit trees, berries, or vegetables.

Land capability units were assigned to each of the general soils groups. From this information, the CNI revealed the potential for these specialty crops in the 3,390,000-acre area in the southeast corner of the state.

CNI figures showed about 161,000 acres of loamy lowland excellent for either fruit trees or vegetables; 186,000 acres of loamy upland rated excellent for vegetables; and 267,000 acres of moderately deep upland soils rated excellent for berries.

Task group chairman, Richard Liebert of Coffeyville, thinks the information will be useful in planning for production of these specialty crops.

Climate, markets, and special soil requirements of individual species are other considerations.

The Southeast Kansas Food Industry Advisory Task Group, appointed by Governor Robert Docking of Kansas, is sponsored by the Ozarks Regional Commission. This commission is a multicounty group in Oklahoma, Arkansas, Missouri, and Kansas created for the purpose of stimulating economic growth in distressed areas.—L. J. GASKELL, *district conservationist, SCS, Altamont, Kans.* ♦

Conservation in action . . .

Multipurpose ponds strengthen farm conservation program

Michigan

Multipurpose farm ponds are the latest in a large number of soil and water conservation practices installed by the Westbrook family on their land in Ionia County Soil Conservation District, Mich.

One pond measures 275 by 60 feet and is 12 feet deep. With a ground-water source and a 30-acre watershed, it supplies water to another storage pond more than an acre in size. The ponds supplement a well capable of producing more than 300 gallons a minute for irrigation of 100 acres of beans and sweet corn. Three years ago Robert Westbrook and his brother Tom began irrigating a small acreage from a creek and soon learned the importance of a well-located central irrigation system.

The main pond is stocked with bass and bluegills, providing fishing and recreation. The farm ponds have replaced the "old swimming hole" and provide for the storage of nearly a million gallons of easily accessible water to help the entire neighborhood in case of an emergency.

In addition to the ponds, conservation practices on the 1,000-acre family farm include contour stripcropping, terraces, diversions, grass waterways, reforestation, and one of the better pasture improvement programs in the county. The pastures were seeded to alfalfa-brome 10 years ago and kept highly productive by proper management and proper fertilization.

Robert Westbrook was elected to the Ionia County District Board of Supervisors in 1959 and was named chairman in 1967. Under his leadership, the district has provided soil studies to two large cities and worked with villages on such projects as parks and water control for golf courses and schools.—GLENN A. CONVERSE, *district conservationist, SCS, Ionia, Mich.*

Tennessee

Newcomer to Appalachia creates model tree farm

What happens when you give a Michigan Yankee a dose of southern sunshine, a smell of Tennessee River fishing, an eye-full of Appalachian mountain beauty, and a little southern hospitality? Well, in the case of Willis Russell, a Yankee immigrant to Meigs County, Tenn., he created a model tree farm.

According to Edd Norman, chairman of the Meigs County Soil Conservation District, "Russ has done more to promote good forestry management in Meigs County than anything since the Bowaters paper mill came to our community."

Russell owns 322 acres of woodland overlooking the Tennessee River. When he bought the land, it was covered with burned over blackjack oak, dogwood, hickory, and some pretty good shortleaf pine and white oak. His conservation plan includes tree planting, weeding, thinning, firebreaks, managed harvests, and Christmas tree production.

Russell has planted more than 50,000 pine seedlings. Some of this was underplanting to convert cull hardwood stands to pine. His goal is to have about 40 percent pure pine, 40 percent pure hardwoods, and 20 percent mixed forest. Russell says, "This way I am sure to hit some market—pulp, poles, or lumber."

Some of Russell's forestry pioneering is showing up in other parts of Meigs County. Since 1956, about 15,000 acres of idle land has been planted to trees. Twenty thousand acres of woodland has been improved and 50 miles of firebreaks have been built.

Russell has been able to take time out of his busy schedule to promote civic work in Meigs County. He served as chairman of the Meigs County Agricultural and Industrial Committee for 3 years. During his tenure, Meigs County obtained its first industry.—ERNEST H. WITAKER, *district conservationist, SCS, Decatur, Tenn.*

Director Westbrook at pond.

Tree Farmer Russell clears some brush.

Montana

His ranch plan tips the moisture balance

"If this country got 2 inches a year less rainfall it would be a desert; if it got 2 inches more it would be lush with grass.

"We can make that 2-inch difference either way, depending on how we treat our land," says Montana rancher and conservationist, Kenneth Coulter.

Coulter makes the difference in the right direction by practicing conservation on his 3,200-acre ranch near Brusett as a cooperator with the Garfield County Soil and Water Conservation District and a participant in the Great Plains Conservation Program.

Since 1958 he has been chairman of his district's board of supervisors, and presently he is a director of the State Association of Soil and Water Conservation Districts.

His 1966 Great Plains contract called for installing three crossfences totaling 590 rods, spraying 280 acres of sagebrush, seeding 112 acres of rangeland, drilling a stockwater well and adding a pipeline, planting 37 acres of hayland, and building a diversion to protect a wheatfield. He has since modified the plan.

The payoff is evident in his calf and lamb crops. In 1968 his Hereford calves averaged more than 500 pounds when sold in November at 6 months' age. They received no supplemental feed. His lambs weigh more than 100 pounds.

His is one of 284 ranches now operating in an area of more than 3 million acres that was a thriving farm area before the droughts of the 1930's.—JOHN E. MOONEY, *district conservationist, SCS, Jordan, Mont.*

Irrigator Metzker in alfalfa.

California

Conservation irrigation provides winter feed

A new source of winter feed for neighboring dairy farms was made possible by a soil and water conservation program on the Kermit Metzker farm at Montague in northeastern California.

Metzker's ranch is in a 6- to 10-inch rainfall area where he raises livestock grain and forage for feed. Originally his land produced a crop of dryland grain every other year. A thousand pounds of dryland alfalfa was all that could be produced without irrigation.

Cooperating with the Shasta Valley Soil Conservation District, Metzker developed and applied a conservation plan which included leveling the land to a uniform grade for flood irrigation. He installed parallel border checks 33 feet apart in the direction of irrigation, enabling him to control water application effectively. He planted a permanent hayland mixture of Ranger alfalfa and intermediate wheatgrass to be harvested for hay.

Metzker says, "This ranch is now productive and easy to operate. It will pay for the investment in 2 years.—DAVID L. CURTIS, *soil conservationist, SCS, formerly of Yreka, Calif.*

Nebraska

Pooling agreement aids in floodwater control

A Great Plains pooling agreement provides for the control of floodwaters from a 1,560-acre drainage from the Wildcat Hills escarpment in Banner County, Nebr.

This agreement resulted from the request of three district cooperators, Charles I. Anderson, Neta Olsen, and Fred Lars Johnson, owning 1,840 acres of land, for group assistance from the Banner County Soil and Water Conservation District to control the floodwater that had been depositing silt, gravel, and rocks onto their fields and flooding the Johnson farmstead. Several neighbors downstream will benefit from the group project.

The landowners agreed to pool specified cost-shares from their Great Plains contracts and to pay a prorated part of the cost of solving their common problem.

The Soil Conservation Service made the surveys for two floodwater dams and a mile-long grassed waterway. The larger dam, approved by the Nebraska Bureau of Water Resources, will be 676 feet long and 34 feet high with 168 acre-feet of storage. A smaller dam ¼ mile down the draw will catch water from 240 additional acres of drainage and will provide 50 acre-feet of storage. The dams, waterway, and exposed borrow and spillway areas will be seeded to native grasses and mulched with prairie hay. The grassed waterway will carry water from the trickle pipe and excess floodwater from the emergency spillway.

Also included in the pooling agreement is a mile-long field diversion to protect 400 acres of cropland below the escarpment and divert the runoff water behind the dam.

In addition, practices on the three individual farms include building a total of 77,000 feet of level terraces, contour stripcropping 396 acres of sloping cropland, seeding 30 acres of steep cropland to native grasses, and developing one spring for livestock water.

When the group detention dams are built, LeRay Edens, a Great Plains cooperator with a 1,200-acre farm immediately down the draw, plans to build a grade stabilization dam to control a 12-foot overfall that continues to eat back into his cropland despite extensive conservation work already done on his land. —DAVID K. RICE, *district conservationist, SCS, Harrisburg, Nebr.* ♦

Laboratory helps keep rural charm

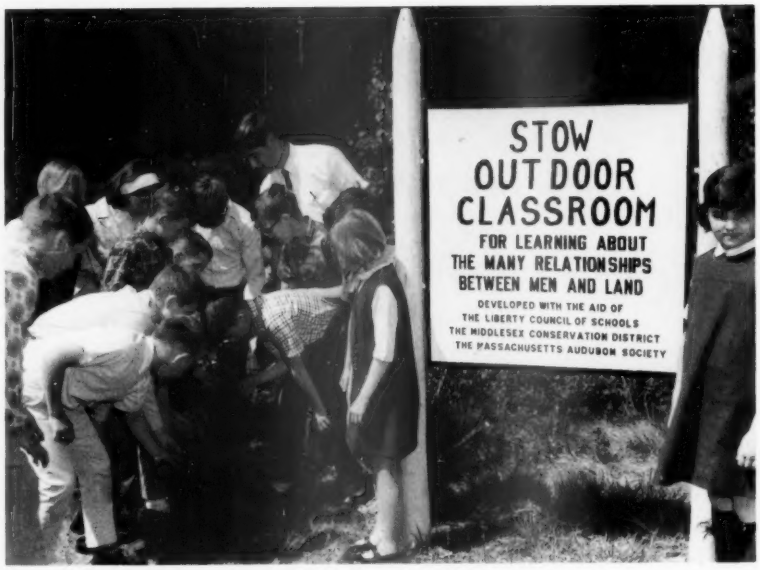
The town of Stow, Mass., has set aside a 4-acre tract of land for use as an outdoor laboratory to be known as the "Stow Outdoor Classroom." It is a byproduct of a soil survey with urban interpretations and a natural resources inventory which Stow obtained in an effort to grow and still preserve the town's rural charm in the face of population growth.

Stow Outdoor Classroom, developed by the Liberty Council of Schools, the Middlesex Conservation District, and the Massachusetts Audubon Society through a grant from the Department of Health, Education, and Welfare, includes trails, a bridge, and a boardwalk built with help from the Boy Scouts. A pond was constructed on adjacent publicly owned land from designs by the Soil Conservation Service.

Trees and shrub plantings are being added, and the areas's cover abounds in ferns, skunkcabbage, ladyslippers, wild geraniums, mountain laurel, blueberries, and other wildflowers and native shrubs.

The underlying theme of the classroom is "The Relation of Man and the Land." First planned for pupils of grades one through four, English classes now make trips and write compositions about the outdoor classroom, and the art classes find nature subjects in their natural setting. Science classes have taken pond water samples indoors for study, and small horned pout and crawfish are kept in fish tanks.

This outdoor classroom has been a model for several similar projects in other towns. Warren M. Little, director of the Nature Center, looks forward to an ever-expanding use of Stow's Outdoor Classroom.—WILLIAM H. COATES, *assistant state conservationist, SCS, Amherst, Mass.* ♦



Teacher Hunt identifies trees and shrubs for the 5th grade class of the Hale School.

Children return to wildlife area

School children of Wirt County, W. Va., this fall are seeing the results of wildlife habitat plantings they made last spring on the Hughes River Public Hunting Area — a 10,000-acre tract of timberland owned by the Westvaco Corporation near Elizabeth.

Groups of fourth and fifth graders from elementary schools in (six towns and communities) visited the forest during 6 days of field sessions and tours in May when the children planted seeds and shrubs for wildlife food, hiked along nature trails, and identified wildflowers and trees. They also marked den trees that birds and animals might use for shelter. Instructors have planned the fall return trip as a continuation of outdoor experiences to give the students a broader understanding of the meaning and benefits of conservation. The series of conservation classes was sponsored by the Little Kanawha RC&D Project.

Representatives of the Westvaco Corporation, West Virginia Department of Natural Resources, West Virginia University Extension Service, Pace Education Center, SCS, and the Wirt County Board of Education are working with students, teachers, and principals on further plans for conservation studies in the area.

Similar programs are being planned also for other schools within the Little Kanawha RC&D in Ritchie, Roane, Calhoun, and Wood counties.—ARUN C. BASU, *area extension specialist, West Virginia University, Morgantown, W. Va.* ♦

Detroit now in soil conservation district

Detroit, Mich., the Nations fifth largest city, is now part of a soil conservation district formed to help alleviate resource problems that occur in an area of rapid land use changes.

Assistant Secretary of Agriculture Thomas K. Cowden has signed a working agreement with the newly formed Wayne Soil Conservation

District. It authorizes appropriate technical and financial aid for the district from the U.S. Department of Agriculture and from state and local sources.

Wayne County, whose boundaries coincide with the new district, is one of the fastest growing areas in the Nation. Approximately 1,000 farms, most of them small, are still operating in the area. But rapid urban growth has created complex erosion and flooding problems, as well as a decrease in land used for agriculture and an increase in idle land held for development.

Local sponsors say the problems of flooding, drainage, pollution, and sediment control will be major concerns of their new soil conservation district. ♦

Symposium on Manmade Lakes being organized

An International Symposium on Manmade Lakes, Their Problems and Environmental Effects will be held at Knoxville, Tenn., on May 3-7, 1971. The conference should be of interest to a broad range of scientists, engineers, and project managers.

The conference is being organized by the Scientific Committee on Water Research (COWAR) on behalf of the International Council of Scientific Unions (ICSU). Numerous unions and committees of ICSU are cooperating, and agencies of the United Nations are providing support. Arrangements in the United States are by the National Academy of Sciences and the Tennessee Valley Authority.

The symposium will assess recent findings, summarize knowledge, and point to needed research on manmade lakes.

Inquiries regarding attendance and participation should be addressed to: Prof. William C. Ackermann, president, Scientific Committee on Water Research, Illinois State Water Survey, Box 232, Urbana, Ill. 61801. ♦

Meetings . . .

Manufacturers study priorities for 70's

"Priorities for the 70's" will be the theme of the 1969 annual meeting of the Congress of American Industries, National Association of Manufacturers, to be held in New York City, December 3-5.

A session on urban priorities will include presentations by the Secretaries of Labor, Housing and Urban Development, and Health, Education, and Welfare. The subjects to be discussed in other sessions include "Campus Unrest," "Technological Development for National Defense," "Collective Bargaining," "Implications of Wage Price Control," "Contributions of Business Methods to the Public Education Process," and "Impact of Technology in the Next Decade."

Economics Society considers changes in agriculture

The American Agricultural Economics Association will hold it's winter meeting in New York City on December 27-30, meeting jointly with the Allied Social Science Association. Sessions will include presentations and discussions of "Micro Simulation Models," "Current Economic Policies," "Meeting the Changing Need for Agricultural Statistics," "Social Change in Public Policy in Rural America," "Data and Research Needs for the 70's," and the "Changing Structure of Agriculture and it's Statistical Needs."

Man and technology concern of science groups

The American Association for the Advancement of Science will hold its annual meeting in Boston, Mass., December 26-31.

Some of the topics in the general symposia include "Arms Control and Disarmament," "Technology Assessment and Human Possibilities," "Science and the Future of Man," "World Order and the Technological Revolution," "Hunger and Malnutrition," "Is There an Optimum Level of Population?," and "Rational Use of Water."

Other topics will be discussed in the committee and section symposia.

Tours will be to the Worcester Foundation for Experimental Biology, New England Aquarium, Cambridge Electron Accelerator, several museums, Woods Hole Oceanographic Institution, Marine Biological Laboratories, U.S. Bureau of Commercial Fisheries, and the Massachusetts Institute of Technology and the Harvard University.

Dates and places

December 1-5, National League of Cities, San Diego, Calif.
2-5, Western Forestry and Conservation Association, Spokane, Wash.
3-5, Congress of American Industries, NAM, New York, N. Y.
8-11, American Farm Bureau Federation, Washington, D. C.
9-11, Annual Corn and Sorghum Research Conference, Chicago, Ill.
9-12, American Society of Agricultural Engineers, Chicago, Ill.
26-31, American Association for the Advancement of Science, Boston, Mass.
27-30, American Agricultural Economic Association, New York, N. Y.
January 1970
13-14, National Council of Farmer Cooperatives, Hollywood Beach, Fla.
14-17, Garden Seed Conference, New Orleans, La.
21-24, National Wool Growers Association, Denver, Colo.
24-28, American National Cattlemen's Association, Washington, D. C.
26-30, American Society of Civil Engineers, Water Resources Conference, Memphis, Tenn.

RC&D Project expands to include more counties

The Box Elder Resource Conservation and Development Project in Utah has been expanded to include Cache County, Utah, and Oneida County, Idaho. The new areas add 1,514,240 acres to the project's original 3,474,606 acres in Box Elder County. ♦

Review

The Subversive Science: Essays Toward an Ecology of Man. EDITED BY PAUL SHEPARD AND DANIEL MCKINLEY. *1969. Houghton Mifflin Company, Boston. 453 pp., Illus. $8.95.*

Start with an intriguing title and add a collection of 3 dozen essays which consider man within and as a part of the natural environment and you have a varied assortment of ideas calculated to delight some readers and infuriate others.

There are a good many well-known names among the authors: Paul Sears, Alan Watts, Rene Dubos, Ian McHarg, Lynn White, and Jacquetta Hawkes. The title of the book is taken from Paul Sears' "Ecology—A Subversive Science" published in *BioScience* in 1964, in which he explored the question of ecology as a science of limited interest as opposed to ecology as an instrument for the long-run welfare of mankind which might endanger the assumptions and practices accepted by modern societies.

Paul Shepard elaborates on the theme in his introduction: "The ideological status of ecology is that of a resistance movement . . . They (the ecologists) challenge the public or private right to pollute the environment . . . they oppose the uninhibited growth of human population . . . the extinction of species of plants and animals . . . the domestication of all wild places."

Essentially, the writers selected for this collection of essays are saying that we must shift our whole frame of reference and our attitude towards life itself to acquire the humility to accept our place in nature, instead of regarding nature as either natural resources or scenery, "the great stereotypes in the minds of middle class, college-educated Americans."

Some readers will undoubtedly consider this philosophy just another man-in-nature mystique; others will find it a mind-stretching experience of varied intellectual encounters. It will delight those who say with St. Francis ". . . our mother the earth which doth sustain and keep us and bringeth forth divers fruits and flowers of many colours, and grass . . .". The rest it will probably bore to extinction.—KATHERINE N. MERGEN, *Information Division, SCS.*

New publications

Water Use: Principles and Guidelines for Planning and Management in Wisconsin. EDITED BY RUTH L. HINE. *1969. Water Use and Planning Committee, Wisconsin Chapter, Soil Conservation Society of America, P. O. Box 5155, Madison, Wis. 53705. 96 pp., illus. Free on request.* This bulletin provides an overview of the current status of Wisconsin's surface and underground waters, their major problems of quantity, quality, and use, and the principles and guidelines being designed and used to advance management in the public interest.

Although pertaining specifically to Wisconsin's resources and problems, it presents much general information of wide application and the "additional sources of information" given at the end of each section would be helpful in any similar study elsewhere. The subjects treated are: Surface waters, wet lands, Great Lakes, ground water, river basins and watersheds, flood-plain management, shore-land management, and water-quality standards.

Land Tenure in the United States; Development and Status. By D. DAVID MOYER, MARSHALL HARRIS, AND MARIE B. HARMON. *1969. USDA Agr. Inf. Bul. 338. 38 pp., charts. $0.50.* An overview of the origins of the United States land-tenure system and information on its current status, with major attention to agricultural land, including that used for grazing and forestry. The data are drawn mainly from the 1964 Census of Agriculture.

Land tenure is concerned with the many relationships that govern access to and use of land resources and claims on goods and services that flow from them. Farm tenures are classified in four major groups—full owners, part owners, managers, and tenants.

Significant adjustments in recent years have seen an increase in proportion of farm operators who are part owners and a decrease in those who are full tenants. Concurrently, there has been a doubling of size of farms between 1940 and 1969 among all tenure groups in all major sections of the country.

Water Pollution Aspects of Urban Runoff. BY AMERICAN WATER WORKS ASSOCIATION. *1969. U.S. Dept. Int., Water Pollution Control Research Series WP-20-15. 272 pp., illus.* Report of a study carried out under contract with the Federal Water Pollution Control Administration. The amount of street litter deposited from various sources, and picked up by storm waters, averaged 4.7 pounds per 100 feet of curb per day in commercial areas and 2.4 pounds in single family residential areas. It included debris dropped by people and washed from yards and open areas, building and demolition wastes, materials eroded from pavements, fecal droppings from animals and birds, fallout of air pollution particulates, and dust and dirt blown by winds.

Recreational Use Patterns at Flaming Gorge Reservoir, 1963-65. BY JOHN G. HEWSTON AND DONALD R. RANKLIN. *1969. U.S. Dept. Int. Resource Publ. 70. 80 pp., illus. $0.75.* Results of a study carried out by means of interviews, questionnaires, and observation by the Bureau of Sport Fisheries and Wildlife and the Utah Cooperative Fishery Unit at Utah State University. The number of visits increased from 231,065 in 1963, the year the reservoir began to fill, to 786,103 in 1965. In 1963, 56 percent of the parties came primarily to sightsee, but fishing became the most important primary purpose in the following 2 years.

Outdoor Recreation and Leisure. BY JAMES R. AND MARJORIE J. PINKERTON. *1969. University of Missouri, Columbia. 332 pp. $4.50.* A reference guide and selected bibliography.

The Appalachian Land Stabilization and Conservation Program. *1969. USDA, PA-898. (12 pp.), illus. $0.10.* A simple explanation of the program.

RC&D Project to improve living standards

A six-county RC&D Project in north-central South Carolina has become eligible for accelerated financial and technical aid from the Department of Agriculture.

The Crossroads of History Resource Project is the 45th local action group to qualify for operations assistance from USDA agencies.

Counties included in the South Carolina RC&D Project are Cherokee, York, Union, Chester, Lancaster, and Fairfield. ♦

From the Administrator:

Another look at our resources

The Nation's first appraisal of needed soil conservation work was the "reconnaissance erosion survey" completed in 1934, by the newly created Soil Erosion Service, predecessor of the Soil Conservation Service.

The new agency, then in the Department of the Interior, did not have personnel nor funds for making a detailed survey. Nevertheless, its fieldworkers covered each state, county by county, in 2 months and mapped general erosion conditions.

The results of this survey, sketchy as it was, startled the Nation and set a new course for the conservation movement. Its results were quoted far and wide. One fact still stands out "that 60.9 percent of all cropland is either subject to continued erosion under current practices or is of such poor quality as not to return a satisfactory return at the price levels assumed."

The effect of that reconnaissance survey on the Government's soil and water conservation policies will be felt for generations. For more than a decade it provided the only real basis for judging erosion and land conditions in the Nation.

In 1945, SCS published "Soil and Water Conservation Needs Estimates for the United States" based on a study started in the fall of 1942. For the first time conservation work was related directly to land-capability classes, a system that only a year or two before had been initiated to help make soil conservation more meaningful to the land owners and users who had to put the conservation work on the land.

It was not until 1957 that local people in every county joined with the Department of Agriculture to study data from soil surveys and sample areas for the purpose of compiling a National Inventory of Soil and Water Conservation Needs. More than 30,000 people in 3,000 counties participated.

The results were unique in soil survey and land use statistics. This was the first time we ever had consistent statistical sampling of the soil, slope, and erosion conditions in every county in the country. It was the first time that all creek-size watersheds had been delineated and their problems enumerated.

Ten years later, this work is continued and refined in the current updating of the Conservation Needs Inventory. Conditions are changing so fast that we cannot stop for a moment in our efforts to learn all that we can about the Nation's soil and water resources. We must have up-to-date information to guide public policy in the conservation and development of resources to meet the needs of the people.

The demand for information about our resources far transcends what was needed in that first survey in 1934. While we were concerned then about food production, about controlling duststorms, about gullies—and I do not minimize these things even today—we are now faced with monumental problems of total land use by county planning commissions and by zoning boards; by the great need to make efficient use of land everywhere; by the need to set aside good farmlands lest they be covered with concrete; and by the responsibility that this Nation has to preserve some breathing space for the generations to come.

Let us make use of this valuable fund of information in our own work as conservationists and make it fully available to those people who must make decisions affecting land use policies. Let it be used to help solve the conflicts between agricultural and industrial needs, between utilitarian and esthetic considerations in resource use. And let us continue to improve the information to meet tomorrow's problems arising out of still further changes in the Nation's needs for land-resource use.

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36 percent of nonfederal land is adequately treated for conservation

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